



AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Application No. 10/506,547

Atty. Docket No. Q68919

### AMENDMENTS TO THE CLAIMS

**This listing of claims will replace all prior versions and listings of claims in the application:**

#### **LISTING OF CLAIMS:**

1. (original): A titanium oxide produced through reaction between a titanium halide-containing gas and an oxidative gas, characterized in that the rutile content of the titanium oxide is 5% or less, and that the specific surface area of the titanium oxide as measured by means of a BET one-point method; i.e.,  $B$  ( $\text{m}^2/\text{g}$ ), and the halogen content of the titanium oxide; i.e.,  $C$  (mass ppm), satisfy the following relation:  $C \leq 650e^{0.02B}$ , and in that, when an aqueous suspension containing the titanium oxide in an amount of 1 mass% is allowed to stand at  $20^\circ\text{C}$  for 30 minutes, the amount of halogen which is transferred from the titanium oxide to a liquid phase is at least 80 mass% on the basis of the entire amount of halogen contained in the titanium oxide.

2. (original): A titanium oxide according to claim 1, wherein the amount of halogen which is transferred from the titanium oxide to a liquid phase is at least 90 mass% on the basis of the entire amount of halogen contained in the titanium oxide.

3. (original): A titanium oxide according to claim 1 or 2, which comprises Fe in an amount of 100 mass ppm or less, Al in an amount of 100 mass ppm or less, Si in an amount of 100 mass ppm or less, and S in an amount of 100 mass ppm or less.

4. (currently amended): A titanium oxide according to ~~any one of claims 1 through 3~~ claim 1, which has a specific surface area of 10 to  $200 \text{ m}^2/\text{g}$ .

5. (currently amended): A titanium oxide according to ~~any one of claims 1 through 4~~ claim 1, which comprises anatase as a primary phase.

6. (original): A titanium oxide according to claim 5, which has an anatase content of at least 90%.

7. (currently amended): A titanium oxide according to ~~any one of claims 1 through 4~~ claim 1, which comprises brookite as a primary phase.

8. (original): A titanium oxide according to claim 7, which has a brookite content of at least 90%.

9. (currently amended): A titanium oxide according to ~~any one of claims 1 through 8~~ claim 1, which has a 90% cumulative mass particle size of 2.5  $\mu\text{m}$  or less as measured by use of a laser diffraction particle size analyzer.

10. (currently amended): A titanium oxide according to ~~any one of claims 1 through 9~~ claim 1, wherein said titanium halogenide is titanium tetrachloride and said halogen is chlorine.

11. (currently amended): A vapor-phase process for producing a titanium oxide as recited in ~~any one of claims 1 through 9 above~~ claim 1, comprising reacting a titanium halogenide-containing gas with an oxidative gas, characterized in that, when the titanium halogenide-containing gas and the oxidative gas are introduced into a reactor, to thereby allow reaction to proceed, the temperature of the interior of the reactor is at least 800°C but less than 1,100°C,

wherein the residence time of the titanium halogenide-containing gas and the oxidative gas in the reactor at temperature range of at least 800°C but less than 1100°C is 0.1 seconds or less.

12. (canceled).

13. (currently amended): A process for producing a titanium oxide according to claim 11 ~~or 12~~, wherein each of the titanium halogenide-containing gas and the oxidative gas is preliminarily heated at a temperature of at least 600°C but less than 1,100°C before being introduced into the reactor.

14. (currently amended): A process for producing a titanium oxide according to ~~any one of claims 11 through 13~~ claim 11, wherein reaction is performed by use of a raw material gas mixture containing titanium halogenide and an inert gas at a ratio of 1 : 0.1 - 20 by mol, and also

by use of an oxidative gas whose amount is 1 to 30 mol on the basis of 1 mol of the titanium halogenide.

15. (currently amended): A process for producing a titanium oxide according to ~~any one of claims 11 through 14 above~~ claim 11, wherein the oxidative gas is an oxygen gas containing water steam.

16. (original): A process for producing a titanium oxide according to claim 15, wherein the oxidative gas contains steam in an amount of at least 0.1 mol per 1 mol of an oxygen gas.

17. (currently amended): A process for producing a titanium oxide according to ~~any one of claims 11 through 16~~ claim 11, wherein said titanium halogenide is titanium tetrachloride.

18. (currently amended): A process for producing a titanium oxide characterized by comprising dehalogenating titanium oxide produced by the process as set forth in ~~any one of claims 11 through 17~~ claim 11 by means of a dry dehalogenation method.

19. (original): A process for producing a titanium oxide according to claim 18, wherein, in the dry dehalogenation method, titanium oxide is heated to 200 to 500°C.

20. (original): A process for producing a titanium oxide according to claim 18, wherein, in the dry dehalogenation method, a steam-containing gas is heated to 200 to 1,000°C, and is brought into contact with titanium oxide.

21. (original): A process for producing a titanium oxide according to claim 20, wherein the steam-containing gas is air containing steam in an amount of at least 0.1 vol.%.

22. (original): A process for producing a titanium oxide according to claim 20, wherein the ratio by mass of the steam to the titanium oxide is at least 0.01.

23. (currently amended): A process for producing a titanium oxide characterized by comprising dehalogenating titanium oxide produced by the method as set forth in ~~any one of claims 11 through 17 above~~ claim 11 by means of a wet dechlorination method, to thereby yield a slurry containing a titanium oxide.

24. (original): A process for producing a titanium oxide according to claim 23, wherein, in the wet dehalogenation method, titanium oxide is suspended in water, and chlorine which is transferred to a liquid phase is discharged to the outside of the resultant suspension.

25. (original): A process for producing a titanium oxide according to claim 23 or 24, wherein, in the wet dehalogenation method, separation of chlorine is performed by use of an ultrafiltration membrane.

26. (original): A process for producing a titanium oxide according to claim 23 or 24, wherein, in the wet dehalogenation method, separation of chlorine is performed by use of a reverse osmosis membrane.

27. (original): A process for producing a titanium oxide according to claim 23 or 24, wherein, in the wet dechlorination method, separation of chloride is performed by use of a filter press.

28. (currently amended): A powder characterized by comprising a titanium oxide produced by a method as recited in ~~any one of claims 11 through 27~~ claim 11.

29. (currently amended): A slurry characterized by comprising a titanium oxide produced by a method as recited in ~~any one of claims 11 through 27~~ claim 11.

30. (currently amended): A composition characterized by comprising a titanium oxide produced by a method as recited in ~~any one of claims 11 through 27~~ claim 11.

31. (currently amended): A photocatalytic material characterized by comprising a titanium oxide produced by a method as recited in ~~any one of claims 11 through 27~~ claim 11.

32. (currently amended): A material for a wet solar cell characterized by comprising a titanium oxide produced by a method as recited in ~~any one of claims 11 through 27~~ claim 11.

33. (currently amended): A dielectric raw material characterized by comprising a titanium oxide produced by a method as recited in ~~any one of claims 11 through 27~~ claim 11.

34. (currently amended): A silicone rubber additive characterized by comprising a titanium oxide produced by a method as recited in ~~any one of claims 11 through 27~~ claim 11.

35. (original): A titanium oxide characterized in that the rutile content of the titanium oxide is 5% or less, the specific surface area as measured by means of a BET one-point method of the titanium oxide is 10 to 200 m<sup>2</sup>/g, the 90% cumulative mass particle size, measured by a laser diffraction particle size analyzer of the titanium oxide is 2.5 μm or less, and the specific surface area of the titanium oxide as measured by means of a BET one-point method; i.e., B (m<sup>2</sup>/g), and the halogen content of the titanium oxide; i.e., C<sub>i</sub> (mass ppm), satisfy the following relation:  $0 \leq C_i \leq 650ke^{0.02B}$  wherein k is 0.20.

36. (original): A titanium oxide according to claim 35, wherein the relation  $10 < C_i \leq 650ke^{0.02B}$  wherein k is 0.15, is satisfied.